

AMENDMENTS TO THE SPECIFICATION

Please amend the specification as follows:

Amend the paragraph beginning on page 2, line 29 as follows:

It is also pointed out for the composite of gadolinium-doped cerium oxide and Perovskite-type oxides in La--Sr--Mn system that, even when high mixed conductivity is attained, the two phases cause chemical reaction upon using at high temperature, and a different phase is formed to ~~disturb~~ disturb mixed conductivity at interface (See Ref.: Solid State Ionics 146, 2002, 163, and J. Eur. Ceram. Soc. 21, 2001, 1763.).

Amend the paragraph beginning on page 3, line 18 as follows:

In order to attain the above-mentioned objects, a composite-type mixed oxygen ion and electronic conductor of the present invention is characterized in that it comprises gadolinium-doped cerium oxide (composition formula: $\text{Ce}_{1-x}\text{Gd}_x\text{O}_{2-x/2}$, where $0 < x < 0.5$) as oxygen ion conductive phase, and spinel-type ferrite (composition formula: MFe_2O_4 , where M=Mn, Fe, Co, Ni) as electronic conductive phase.

Amend the paragraph beginning on page 10, line 5 as follows:

FIG. 5 is a table showing the comparison of oxygen permeability of the GDC-CFO composite-type mixed oxygen ion and electronic conductor of the present invention to the conventional composite-type mixed conductor. In the figure, the kinds of composite-type mixed conductors are shown by the volume composition ratio of CFO to GDC and the kinds of ~~doped~~

Amendment under 37 C.F.R. §1.312
Application No. 10/510,343
Attorney Docket No. 042843

of doped catalysts, and the measurement temperature was 1000°C. In the lower part of the table, the oxygen permeability of the conventional composite-type mixed conductor was shown.

Amend the paragraph beginning on page 12, line 33 as follows:

The outline of this method is shown in FIG. 8. In this system, by supplying air and methane to both sides of the oxygen permeable ceramics (a mixed oxygen ion and electronic conductor only conducting oxygen ion and electron; an oxygen ion-electron mixed conductor), pure oxygen ~~permeats~~ permeates to the methane side, and partial oxidation reaction takes place on the methane side. As its merits, 1) exothermic reaction, and in addition, 2) the system is simple, because the oxygen permeable ceramics does not need electrodes or interconnectors; 3) the required quantity of pure oxygen for reforming is automatically separated and supplied to the methane side;; and 4) the oxygen permeable ceramic membrane acts as a separator for methane and air; can be mentioned.